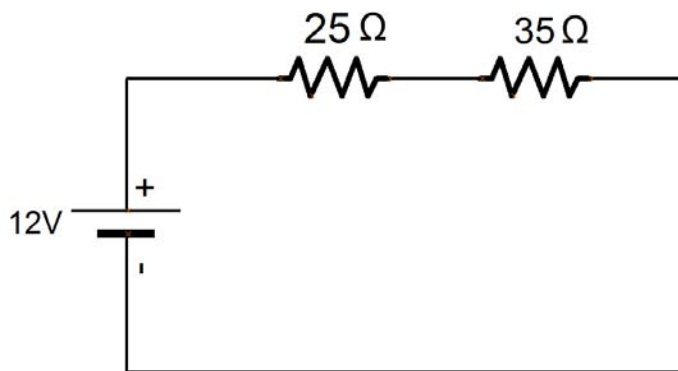


13. How much does it cost to run a 1500-W hair dryer 30 minutes each day for one month (30 days) at a cost of 8¢ per kWh?

$$\frac{8\text{¢}}{\text{kWhour}} * 1500\text{W} * \frac{\text{kW}}{1000\text{W}} * \frac{\text{hour}}{60 \text{ minutes}} * \frac{30 \text{ minutes}}{\text{day}} * \frac{30 \text{ days}}{\text{month}} * 1 \text{ month}$$
$$= 180\text{¢}$$

19. Two resistors with values of 25 Ω and 35 Ω, respectively, are connected in series and hooked to a 12-V battery.



- a. How much current is in the circuit?

$$V = IR$$

$$I = \frac{V}{R}$$

$$I = \frac{12\text{V}}{(25\Omega + 35\Omega)}$$

$$I = 0.20\text{A}$$

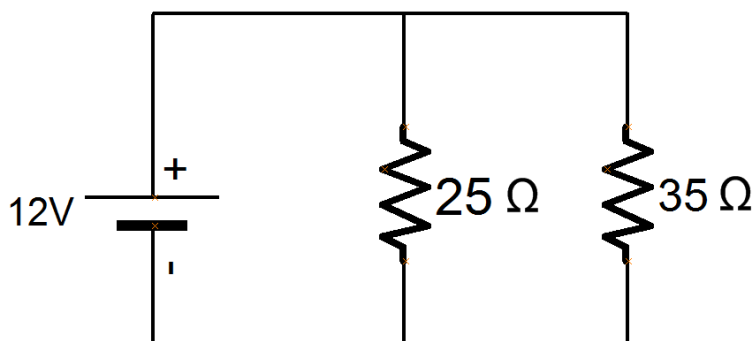
- b. How much power is expended in the circuit?

$$P = VI$$

$$P = 12\text{V} * 0.20\text{A}$$

$$P = 2.4 \text{ Watts}$$

20. Suppose the two resistors in Exercise 19 were connected in parallel. What would be:



- a. The current is in the circuit?

*There are several ways to determine the current. I will show one way that is different from the book. You may select any method you choose for the test.*

*First find the current through the 25Ω resistor...*

$$V = IR$$

$$I = \frac{V}{R}$$

$$I = \frac{12V}{25\Omega}$$

$$I = 0.48A$$

*Second find the current through the 35Ω resistor...*

$$V = IR$$

$$I = \frac{V}{R}$$

$$I = \frac{12V}{35\Omega}$$

$$I = 0.34A$$

*Add the two currents up to get the total current.*

$$I = 0.48A + 0.34A$$

$$I = 0.82A$$

b. The power in the circuit?

$$P = VI$$

$$P = 12V * 0.82A$$

$$P = 9.8 \text{ Watts}$$

FOR CHECKING YOUR WORK ONLY